AD-A017 867

SOVRaD - A DIGEST OF RECENT SOVIET R AND D ARTICLES, VOLUME 1, NUMBER 10, OCTOBER 1975

S. Hibben, et al

Informatics, Incorporated

Prepared for:

Defense Supply Service
Defense Advanced Research Projects Agency

October 1975

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) SOVRaD - A Digest of Recent Soviet R&D Articles, Vol. I, no. 10, 1975		5. TYPE OF REPORT & PERIOD COVERED Scientific . . . Interim 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) S. Hibben, L. Boylan, J. Kourilo, B. Shresta, M. Ness		8. CONTRACT OR GRANT NUMBER(s) MDA-903-76C-0099
9. PERFORMING ORGANIZATION NAME AND ADDRESS Informatics Inc. 6000 Executive Boulevard Rockville, Maryland 20852		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS DARPA Order No. 3097 Program Code No. P6L10, P6D10, P6E20, P6G10
11. CONTROLLING OFFICE NAME AND ADDRESS Defense Advance Research Projects Agency/TAO 1400 Wilson Boulevard Arlington, Virginia 22209		12. REPORT DATE October, 1975 13. NUMBER OF PAGES 16
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Defense Supply Service - Washington Room 1D245, Pentagon Washington, D. C. 20310		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Scientific . . . Interim

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Underwater Optics
Laser Spectroscopy
Geophysics
Material Science
Oceanography
E-Beam Interaction
Semiconductor Research

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This is a collection of brief abstracts on miscellaneous topics from the current Soviet technical literature. The intent is to supply a quick look at items of possible interest, including topics not necessarily named in the DARPA interest profile, as a supplement to our reportage on specified topics.

It is intended to publish this collection on a monthly basis, to continue to provide prompt coverage of numerous aspects of Soviet R&D. As an added feature, all recently acquired books will be listed as they are received. A list of source abbreviations is appended.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

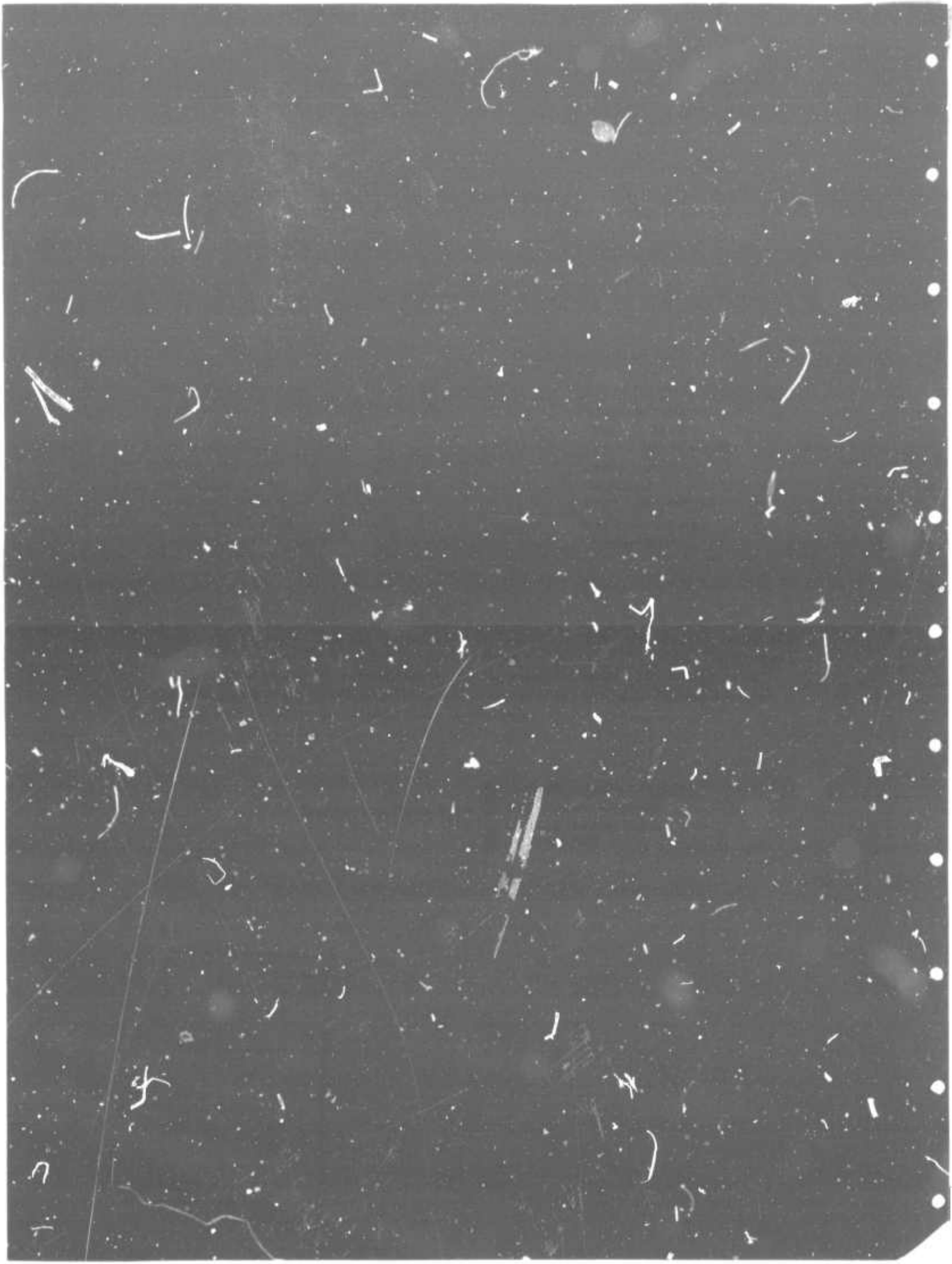
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

INTRODUCTION

This is a collection of brief abstracts on miscellaneous topics from the current Soviet technical literature. The intent is to supply a quick look at items of possible interest, including topics not necessarily named in the DARPA interest profile, as a supplement to our reportage on specified topics.

It is intended to publish this collection on a monthly basis, to continue to provide prompt coverage of numerous aspects of Soviet R&D. As an added feature, all recently acquired books will be listed as they are received. A list of source abbreviations is appended.

For further information the reader is invited to call Stuart Hibben or Lee Boylan at Informatics on (301)-770-3000.



Laser Effect on Superconductivity (abstract)

The disrupting effect of selective laser radiation on superconducting Pb and Nb_3Sn films has been observed and analyzed. Superconducting film specimens exposed to pulsed GaAs laser radiation at powers up to 50 w were seen to develop measurable resistivity at temperatures below their normal critical temperature. The effect is illustrated both as functions of ambient temperature and of laser pulse parameters at a fixed temperature. Results indicate a nonuniform spatial distribution of excitation under laser exposure, hence the effect cannot be ascribed to laser heating alone. [Golovashkin, A. I., K. V. Mitsen, and G. P. Motulevich. Experimental study of a nonequilibrium superconducting state from laser excitation. ZhETF, v. 68, no. 4, 1975, 1408-1412].

IR to Visible Conversion (abstract)

Two researchers at the Vavilov Optical Institute, V. Ovsyankin and P. Feofilov, are credited with discovery of a new frequency conversion phenomenon. They have used a mixture of rare earth crystals, one absorbing IR and the other emitting in the visible range, to obtain IR to visible conversion. Luminophors based on this principle are in use as miniature converters; no other details are given. [Mostovshchikov, A. Two windows on the unknown world. Trud, Sept. 27, 1975, p. 4].

Dynamic Holography

Researchers at the Physics Institute of the Byelorussian Academy of Sciences have demonstrated a system for dynamic real-time holography of moving subjects, as contrasted with the usual static imaging technique. While still in the laboratory stage, this technique is seen as having wide application in automatic control of production processes, as well as in broadcasting of mass events such as concerts or sports affairs. [New profession for the laser. Leningradskaya pravda, 17 Sept. 1975, p. 1].

Possible Nuclear-to-Optical Energy Conversion (abstract)

In 1974 Gudzenko and Yakovlenko briefly analyzed the theoretical feasibility of converting fission energy directly to optical rather heat energy (SOVRaD, v. 1, no. 1, 1975, 1). A subsequent paper reiterates the advantages of such conversion, and goes into a more detailed analysis of the proposed technique. As before, the example suggested uses UF_6 together with a helium filler gas as fuel, He being the active lasing element.

In the analysis the active medium is assumed to generate and amplify optical radiation by the mechanism of nonequilibrium recombination of supercooled plasma electrons. Radiation from the reactor becomes

unidirectional in an optical resonator when gain in the active medium exceeds loss in the resonator.

The theoretical conversion efficiency of this model is only about 5%, based on use of helium. However, projected efficiencies of 50% or better for new plasma lasers is seen as giving promise to the idea. [Gudzenko, L. I., I. S. Slesarev, and S. I. Yakovlenko. Feasibility of a nuclear reactor-laser. ZhTF, no. 9, 1975, 1935-1939].

Laser Memory (abstract)

A laser-induced metal to semiconductor phase transition has been tested for data storage. Researchers report that samarium sulfide thin films exposed to a pulsed laser will develop dark spots in the interaction area which are semiconducting. This phenomenon permits SmS films to be used as a memory; tests show that with a laser energy density of 0.3 j/cm^2 and duration of 0.5 millisecond, a write density of over 10^7 $bits/cm^2$ can be achieved. In addition, both phases are stable under room conditions. [Kaminskiy, V. V., A. I. Shelykh, T. T. Dedegkayev, T. B. Zhukova, S. G. Shul'man, and I. A. Smirnov. Metal-to-semiconductor phase transition in SmS under laser irradiation. FTT, no. 5, 1975, 1546-1548].

Study on TiC-ZrC Compound (abstract)

TiC and ZrC have been widely examined as promising for MHD materials and other new technologies where high-temperature stability and resistance to ion bombardment are required. However, reported data on some of their parameters, notably work functions, has been conflicting. A recent study was accordingly made to clarify the effect of adsorbed N_2 and O_2 on the work function of these carbides. Vacuum chamber tests were done on a binary TiC-ZrC compound at 10^{-5} torr or less partial pressures of N_2 and O_2 over a temperature range of 1300-1900 K. Graphical results are given which clearly define the work function characteristic as a function of residual gas pressure and temperature. This variation in work function for TiC-ZrC is particularly pronounced for pressures above 5×10^{-7} torr. [Nechiporenko, Ye. P., V. S. Kirillov, and V. I. Safonov. Work functions of binary titanium-zirconium carbide in a 10^{-9} - 10^{-5} torr vacuum as a function of adsorbed N_2 and O_2. TVT, no. 4, 1975, 870-872].

Failure Probability of Composite Material (verbatim)

A method is developed for the evaluation of probability of composite material failure, taking into account the probability of failure over any possible failure surface. A model is considered in which a failure surface occurs without a fiber failure, and a method is developed for determining the probability of occurrence of such a surface. [Palley, T. Z., V. Ya. Ozols, and A. N. Shmarov. Determining probability of failure for composite materials reinforced by oriented fiber segments. IN: Sb. Voprosy dinamiki i prochnosti Vyp. 31. Riga, Zinatne, 1975, 142-149. (RZhMekh, 8/75, #8V1069)].

Thermonuclear Reaction from Coulomb Interactions (abstract)

P. L. Kapitsa advances another article in support of his theory of obtaining fusion by coulomb heat transfer from electrons to ions. Variants on this idea have been proposed by Kapitsa for several years. It is shown here how such a reactor could function based on a D-T reaction in a plasma filament configuration. Plasma lifetime required for a pulsed ion heating system is evaluated. Kapitsa also shows why this method is inherently unworkable in either the tokamak or laser-driven reactions.

While Kapitsa feels the proposed coulomb heating method is feasible, it would be less effective than the magnetoacoustic heating earlier proposed by him (ZhETF, 67, 1974, 1411). [Kapitsa, P. L. Obtaining useful energy from thermonuclear reactors. ZhETF P, v. 22, no. 1, 1975, 20-25].

Magnetoplasma Compressor Study (abstract)

Several studies have been reported in the past year on so-called magnetoplasma compressors, which are high-current plasma generators typically having a compressed or pinch region owing to inertial effects and the induced magnetic field. This gives a "waterspout" configuration which exhibits interesting properties, including x-ray and neutron radiation.

A recent study examines the fine structure of the pinch region in which filamentary "pinchlet" formations have been detected. These tests were done on helium, using a 200 microsecond discharge current ranging from 250 to 500 kiloamperes. A high-speed electrooptical framing method was used which revealed up to three discrete "pinchlets" having life times extending for several microseconds. Local heating and ion flux behavior are suggested as possible governing factors. [Kovrov, P. Ye., and A. I. Morozov. Regular structures in the flux compression region of a magnetoplasma compressor. ZhETF P, v. 22, no. 3, 1975, 133-135].

Uniform Plasma Cylinder (abstract)

An experiment with heavy-current discharge in an inverse Z-pinch configuration, initiated by explosion of a single wire, is described. The results indicate the possibility for generation of a plasma column which is homogeneous along its axis and weakly inhomogeneous in the radial direction. The diameter of the plasma column is considerably larger than that of the circular array of counter lead wires. The plasma column is characterized by a lower inductance and larger expansion rate than a simple linear plasma system. [Andreyev, S. I., O. G. Baykov, T. V. Gavrilova, V. Ye. Gavrilov, and M. V. Zasolotskaya. Possibility for production of a homogeneous plasma cylinder in the configuration of an expanding coaxial discharge, initiated by exploding wire. ZhTF, no. 9, 1975, 199-200].

Review of Plasma Diagnostics (verbatim)

This collection of articles is devoted to metrological problems of plasma diagnostics. The principal problems considered are: creation of new standards for physical quantities; analysis of the precision and application limits of diagnostic methods; and providing uniformity of measurements. Results of theoretical and experimental studies of a d.c. plasmatron and a low-pressure gas discharge in neon are presented. Improvements in the techniques and apparatus for optical diagnostics of plasma are described. The design of high-resolution apparatus used in the study of contour shape and spectral lines shift is discussed. Articles devoted to microwave methods of plasma diagnostics describe experimental studies on techniques and apparatus for measurements of electron temperature; they also treat problems on measurements of temperature distribution in plasma flows in closed chambers, use of plasma-scattered microwave radiation for diagnostics, and design of precise recording systems. [Issledovaniya v oblasti diagnostiki plazmy (Research in plasma diagnostics). Metrologicheskiye instituty SSSR. Khar'kov. NII, metrologii, Trudy, no. 10. Khar'kov 1973, 316 p. (RZhF, 10/74, #10G362 K)].

Scanning of Plasma Interferograms (abstract)

A program is described for processing interferograms of plasma flare density. This program can be used for various interferograms and it includes: scanning; digital filtering; determining minimum illumination; visual correction on a display device by a light pen; and calculation of plasma density. [Taran, V. S., and V. A. Yamnitskiy. Scanning of half-tone interferograms (Rastr-3 program). IN: Sb. Voprosy atomnoy nauki i tekhniki. Seriya: Avtomatizatsiya fizicheskogo eksperimenta i ego matematicheskoye obespecheniye. Vyp. 1(3). Khar'kov, 1974, 38-40. (RZhF, 4/75, #4D1515)].

MHD Generator Used for Seismic Sounding (abstract)

In the Pamirs, at an elevation of 2500 meters, Soviet seismologists have tried electric probing 20 kilometers deep inside the Earth's crust using an MHD generator. A pulse of several thousand amperes was sent into the ground for a duration of 3 seconds. Six seismological observatories on the Pamirs and Tienshan Mountains recorded the 20 kilometer deep path on oscillographs. The different electric resistance of various rock formations was recorded with high accuracy. The successful MHD sounding method is thus able to record tectonic processes and potential changes. The use of this method in earthquake forecasting is foreseen. [Wehner, F. 20,000 meters under the Pamirs. Neues Deutschland, 6/7 September 1975, p. 16, col.1].

Isotope Separation by Supersonic Flow (abstract)

The feasibility of isotope separation in a chemical equilibrium reaction has been shown theoretically and confirmed experimentally in the case of gaseous reactants with a high freezing point. A corollary study suggests that enrichment of the reaction products in the heavier isotope can be achieved by supersonic expansion of a hot mixture of reactants in a nozzle. The enrichment occurs because of a break between the vibrational temperature of the isotope-containing molecules of a reactant and the translational gas temperature. In experiments the natural N^{15} isotope content of NO molecules has been more than doubled by supersonic expansion of the products of N_2 oxidation in an exploding H_2-O_2-N_2 mixture. [Basov, N. G., E. M. Belenov, V. V. Gromov, V. A. Isakov, Yu. S. Leonov, Ye. P. Markin, A. N. Orayevskiy, V. I. Romanenko, N. B. Ferapontov and D. S. Shapovalov. Isotope separation in a supersonic flow. ZhETF P, v. 22, no. 3, 1975, 156-158].

Tests of OSA-3-600 Undersea Research Vehicle Continuing (abstract)

The 12-ton, 3-man OSA-3-600 undersea research vehicle has been reported undergoing more test several kilometers offshore in the Gulf of Finland. The tests are taking place in quite shallow water (less than 100m) despite OSA's 600-meter depth capability. Four 3-man crews are being trained for OSA operations.

An interesting sidelight in the article is mention of the fact that V. P. Shmatok, OSA's chief designer (and head of the Moscow Branch of Giprorybflot Institute), conceived the idea of a stabilized vehicle 15 years ago during his service in the Soviet submarine fleet. At that time the Soviet Navy's first underwater vehicle was designed and built under Shmatok's supervision. Continued emphasis is put on vehicle safety (droppable manipulator, outboard equipment, and an automatic, pilot-overriding emergency surfacing system), as well as the hydroacoustic depth-keeping (height over bottom) system. [Panyukhno, Ye. OSA departs for the deep. Vodnyy transport, 7 November 1975, p. 4, cols. 4-7].

New Type of Soviet Research Vessel Built by Finland (abstract)

The first of a new type of research vessel being built by Finland for the USSR was launched recently. The first ship in the series of three has been named the Professor Bogorov. Two of the ships will be used for geological, geophysical, and physical oceanographic research; the third will be turned over to the Institute for the Biology of Southern Seas (Ukrainian Academy of Sciences). This vessel type was developed around the design used for the Dmitriy Ovtsyn, a hydrographic ship.

The Professor Bogorov is 68.6 meters long, displaces 1,600 metric tons, and has a cruising range of 10,000 nm. The 2000-hp main engine gives the Bogorov a speed of 14 knots. Ten laboratories are available for

research purposes. Two of the ships will be assigned to Black Sea ports, while the third will operate out of the Soviet Far East. [Suzyumov, Ye. First of a series of research ships. Vodnyy transport, 9 October 1975, p. 4, cols. 2-3].

Cavitation Statistics (verbatim)

The problem considered is that of the origin of cavitation in the rarefaction zone behind a streamlined body due to unstable gas bubbles. The gas bubbles as cavity nuclei are assumed to have a distribution curve inversly proportional to the cube of their radius. The dependence of the number of unstable bubbles on flow characteristics for wing profiles and bodies of rotation, as well as the distribution law for cavity size, are found. Analogous relations for the case of pressure fluctuations are given. [Kandelaki, D. V., and G. N. Kuznetsov. Statistical characteristics of the origin of hydrodynamic cavitation. 5-ya Vsesoyuznaya shkola-seminar po statistishcheskoy gidroakustike (SG-5). Trudy, Novosibirsk, 1974, 179-182. (RZhMekh, 8/75, #8B550)].

Hot Probe Current Meter (verbatim)

Under ordinary conditions the cooling of the sensing element in a hot-probe current meter will depend on water temperature as well as flow rate. An experimental technique is described for taking this fact into account when measuring small flow rates in water. [Yefimov, A. V. Allowing for inversion properties in water when measuring small flow rates with thermohydroanemometers. IN: In-t merzlotoved. AN SSSR, Yakutsk, 1975, 10 p. (RZhMekh, 7/75, no. 7B1378 DEP)].

Thermal Sensor for Turbulent Flow (verbatim)

Equations are given for mathematical expectation of registry on a ribbon thermal sensor and a physical model is proposed. This assumes an infinite ribbon in continuous thermal contact with a half-space. In this case any temperature gradients within the film can be neglected owing to its thinness. It is shown that systematic error is determined both by thermal sensor properties as well as by characteristics of the measured turbulent flow. [Azizov, A. M., V. P. Goncharuk, and M. I. Kurochkina. Study of the quality of registering mean temperature of a turbulent flow on ribbon thermosensors. ZhPK, no. 3, 1975, 546-549].

Dolphin Discrimination of Targets (abstract)

Tests are reported of a dolphin's ability to discriminate between spherical metal targets of differing materials and dimensions. Target pairs of identical material but differing diameters, as well as identically-sized but differing materials (brass, duralumin) were used. The object was to test an empirical discrimination model for dolphin echolocation, based on sound velocity in water, target dimensions, and the average oscillatory period in the echo signal spectrum. The dolphin discrimination factor is thought to be

basically the ability to differentiate between the last two factors.

Results are given for a dolphin, estimated at 15 to 20 years old, in a test tank with target spheres separated by some 7 meters. Sphere diameters varied from 40 to 50 mm for brass, and 50 to 80 mm for duralumin. The observational method is described only as based on "motor reflexes and food motivation". Results showed a discrimination rate ranging from 55% to 100%, depending on target parameters. The tests suggest that the difference in mean period of echo spectra is the primary indicator sought by the dolphin failing this it seeks other indicators for discrimination. [Dubrovskiy, N. A., and A. A. Titov. Echo discrimination by the afalina dolphin (Tursiops truncatus) of spherical targets, differing in dimensions and materials simultaneously. Akusticheskiy zhurnal, no. 3, 1975, 469-471].

Evaluation of Dolphin Echo-ranging (abstract)

Functions of a dolphin sonar are compared to these of an optimum theoretical model. Dolphin signals were taped in a 1-200 Hz range. Optimum detection and resolution signals are calculated, assuming a constant frequency response of the acoustic channel and negligible dispersion of phase velocities. The results of the comparison show that dolphin's detection and resolution signals closely follow the calculated optimum ones. The authors conclude that a dolphin's hydroacoustic apparatus is unstable and that its echo-ranging signals can be classified in terms of technical problems of hydroacoustics. [Golubkov, A. G., V. I. Korolev, V. A. Antonov, and Ye. A. Ignat'yeva. A comparison of a dolphin's echo-ranging signals with calculated optimum signals. DAN SSSR, v. 223, no. 5, 1975, 1251-1252].

Satellite Radiometry of Earth (abstract)

Measurements of brightness temperature of radiation within the 60-130μ and 350-650μ ranges were made aboard Cosmos-669 during a four-day period. A preliminary analysis suggests that both small- and large-scale fluctuations of the brightness temperature observed are related to the general circulation in the Earth's atmosphere. These measurements thus open a new possibility for the study of the atmosphere. [Salomonovich, A. Ye., S. V. Solomonov, A. S. Khaykin, V. S. Kovalev, and A. A. Kobzev. Satellite-born measurements of submillimeter radiation of the Earth's atmosphere. DAN SSSR, v. 223, no. 4, 1975, 852-855].

Computers to Design Computers (abstract)

The Soviet Academy of Sciences, in cooperation with industry specialists, has developed and placed in operation an automated computer designing system, in which existing computers are used to assist in designing new computers and their components.

The automated system assists in solving the following problems: modelling of logic structures of computers and various types of integrated circuits; preparing production flow charts for mechanical and electronic equipment; and preparing the necessary engineering documentation for the circuit fabrication. V. M. Glushkov, V. P. Derkach, and Yu. V. Kapitonova of the Cybernetics Institute in Kiev were the principal designers; their names have been submitted for the State Prize.

The authors of the article, both Academicians, are credited with introduction of the first automated system for designing new computers, i.e. of a system that differs from all the other existing systems by the fact that all stages of algorithmic and system design are automated. As a result, design time is reduced by 7-10 times, with lower overall cost and higher quality. The program base of the new system includes about 2 million commands. Previously, programmers would spend an average 2,000 man-years for designing a computer, for which the new system requires only 75 man-years. The new system widens the scope of possibilities for the designer in selecting more effective methods of problem solving, in analyzing the consequences of the choice made, in introducing modifications into the design, and in selecting the best alternative. [Bogolyubov, N., and B. Petrov. Computers help in designing new computers. Pravda, 16 Oct. 1975, p. 2].

Recent Publications

Abzhirko, N. N. Vliyaniye vibratsii na kharakteristiki radiolokatsionnykh antenn (Effect of vibration on characteristics of a radar antenna). Moskva, Sov. radio, 1974, 166 p. (LC-VKP)

Banakh, V. A., and V. L. Mironov. Spektry vremennykh fluktuatsiy intensivnosti lazernogo izlucheniya, rasprostranyayushchegosya v turbulentnoy atmosfere (Spectra of time fluctuations in laser propagation in a turbulent atmosphere). SOAN SSSR, Tomsk, 1974, 22 p. (KLDV, 7/75, no. 12228).

Brandt, A. A. Plazmennye umnozhiteli chastoty (Plasma frequency multipliers). Moskva, Nauka, 1974, 207 p. (LC-VKP)

Burgrovskiy, V. V. et al. Osnovy avtomaticheskogo upravleniya yadernymi k smicheskimi energeticheskimi ustanovkami (Fundamentals of automatic control of space nuclear energy systems). Moskva, Mashinostroyeniye, 1974, 378 p. (LC-VKP)

Danelov, R. L., A. M. Dmitriyev, and Yu. B. Molochkov. Antenny monoimpul'snykh radiolokatsionnykh stantsiy (Antennas for monopulse radars), 1974, 70 p. (KL, 33/75, no. 29402).

Ikornikova, N. Yu. Gidrotermal'nyy sintez kristallov v khloridnykh sistemakh (Hydrothermal synthesis of crystals in chloride systems). Moskva, Nauka, 1975, 223 p. (KL, 33/75, no. 29229).

Issledovaniya po programme POLEKS (Studies within the framework of the POLEX program). Leningrad, Gidrometeoizdat, 1974, 232 p. (LC-VKP)

Kataliticheskoye gidrirovaniye i okisleniye (Catalytic hydrogeneration and oxidation). Alma-Ata, Nauka, 1974, 178 p. (LC-VKP)

Khimiko-okeanograficheskiye issledovaniya morey i okeanov (Chemico-oceanographic study of seas and oceans). Moskva, Nauka, 1975, 203 p. (LC-VKP)

Khriplovich, I. B., and A. I. Vaynshteyn. Neytral'nyye potoki pri slabykh vzaimodeystviyakh i effekt Dzhozefsona (Neutral currents in weak interactions, and the Josephson effect). SOAN SSSR, Novosibirsk, 1974, 8 p. (KLDV, 7/75, no. 11920).

Levitskiy, Ye. M., S. M. Men'shikov, and Yu. A. Chizhov. Modelirovaniye amerikanskoy ekonomiki (Modeling American economics). Novosibirsk, Nauka, 1975, 224 p. (LC-VKP)

Mamontov, G. V., and V. V. Zhukov. Izgotovleniye metallopolimernykh zatvorov armatury (Preparation of metallopolymer armature seals). Moskva, TsINTIkhimneftemash, 1974, 29 p. (KLDV, 7/75, no. 12555)

Mazurin, O. V., M. V. Strel'tsina, and T. P. Shvayko-Shvaykovskaya. Odnokomponentnyye i dvukhkomponentnyye okisnyye nesilikatnyye sistemy (One-component and two-component nonsilica oxide systems). Leningrad, Nauka, 1975, 630 p. (LC-VKP)

Mikroelektronika i fiziko-tekhnologicheskiye voprosy priborostroyeniyea (Microelectronics and physico-technological problems of instrument design). Moskva, 1972, 78 p. (LC-VKP)

Morozov, A. I., and A. P. Shubin. Kosmicheskiye elektro-reaktivnyye dvigateli (Electroreactive space engines). Moskva, Nauka, 1975, 61 p. (LC-VKP)

Nikolov, I. Kibernetika i ekonomika (Cybernetics and economics). Translation from Bulgarian. Moskva, Ekonomika, 1974, 183 p. (LC-VKP)

Opticheskaya golografiya (Optical holography). Leningrad, Nauka, 1975, 112 p. (LC-VKP)

Polyakova, K. K. Zashchitnyye pokrytiya trub (Protective coatings for pipes). Moskva, Metallurgiya, 1975, 214 p. (LC-VKP)

Problemy eksperimental'nykh issledovaniy v okeane. Okeanol. issledovaniya, Sbornik statey (Problems of experimental research in the ocean. Oceanological studies. Collection of articles), no. 27, Moskva, Nauka, 1975, 127 p. (KL, 32/75, no. 28330)

Sintez i issledovaniye polimerov. Sbornik statey. (Synthesis and study of polymers. Collection of articles). Alma. Ata. Nauka, 1975, 118 p. (KL, 32/75, no. 28313)

Smirnov, Yu. I. and V. G. Shabratov. Sverkprovodyashchiy solenoid s polem do 100 KE (Superconducting solenoid with fields to 100 koe). Dubna, OIYaI, 1975, 8 p. (KL, 33/75, no. 29424)

Sovremennyye magnitoopticheskiye metody izmereniy magnitnykh kharakteristik ferromagnitov (Contemporary magneto-optical methods of measuring magnetic properties of ferromagnets). Moskva, VNIIKI, 1974, 58 p. (LC-VKP)

Sukhov, Yu. V., and N. F. Krupnikova. Materialy i izdeliya iz keramiki i mineral'nykh rasplavov (Materials and parts of ceramic and mineral compounds). Kuybyshev, 1974, 27 p. (KLDV, 7/75, no. 12626)

Verte, L. A. Magnitnaya dinamika v metallurgii (Magneto-hydrodynamics in metallurgy). Moskva, Metallurgiya, 1975, 287 p. (LC-VKP)

Vsesoyuznyy simpozium po protsessam rosta i sinteza poluprovodnikovykh kristallov i plenok (All-Union symposium on processes of growth and synthesis of semiconductor crystals and films), 3rd, Novosibirsk, Nauka, 1975, (LC-VKP)

Vtoroy simpozium po molekulyarnoy spektroskopii vysokogo i sverkhvysokogo razresheniya (Second symposium on molecular spectroscopy of high and superhigh resolving power). Tomsk, SOAN SSSR, 1974, 148 p. (LC-VKP)

Vysokokachestvennyye svoystva plazmy (High-quality plasma properties). Kiyev, Naukova dumka, 1968, 222 p. (LC-VKP)

SOURCE IDENTIFICATION

DAN SSSR	-	Akademiya nauk SSSR. Doklady
FTT	-	Fizika tverdogo tela
TVT	-	Teplofizika vysokikh temperatur
ZhETF	-	Zhurnal eksperimental'noy i teoreticheskoy fiziki
ZhTF	-	Zhurnal tekhnicheskoy fiziki
ZhETF P	-	Pis'ma v Zhurnal eksperimental'noy i teoreticheskoy fiziki
RBL	-	Russian Book List
KL	-	Knizhnaya letopis'
KLDV	-	Knizhnaya letopis'. Dopolnitel'nyy vypusk
LC-VKP	-	Library of Congress acquisition